

United States of America

Draft U.S. Proposal for the work of the Conference

Agenda Item 1.6 (Res. 414): *to consider additional allocations for the aeronautical mobile (R) service in parts of the bands between 108 MHz and 6 GHz, in accordance with Resolution 414 (WRC-03) and, to study current satellite frequency allocations, that will support the modernization of civil aviation telecommunication systems, taking into account Resolution 415 (WRC-03);*

Background Information: This proposal considers additional allocations for the aeronautical mobile (R) service (AM(R)S) in parts of the bands between 108 MHz and 6 GHz, in accordance with Resolution 414 (WRC-03).

Existing AM(R)S bands are nearing saturation in high traffic areas. In addition, new applications and concepts in air traffic management put further pressure on existing AM(R)S bands. Resolution 414 (WRC-03) states that new technologies to support air navigation may not conform to the definition of aeronautical radionavigation in the Radio Regulations. WRC-03 provided a mechanism to implement these new aviation technologies by adding AM(R)S use in the band 108 - 117.975 MHz by footnote 5.197A in accordance with Resolution 413 (WRC-03).¹ One emerging application driving requirements for new AM(R)S spectrum is the integration of command and control for unmanned aircraft (UA) into air traffic services (ATS) airspace. Conversely, AM(R)S spectrum is not appropriate for UA payload data use, such as downlinking information and operational data from the UA.

ITU-R Working Party 8B (WP 8B) and the International Civil Aviation Organization (ICAO) developed a draft operational concept, and technology selection criteria and procedures for new aviation technology. WP 8B and ICAO determined that the new aviation systems require two distinct categories of AM(R)S spectrum. The first category for surface applications could support high data throughput over moderate transmission distances. There is a high degree of reuse of this spectrum. For surface applications, ICAO and WP8B recommended 5 091 - 5 150 MHz as a suitable band. ITU-R has studied the band 5 091-5 150 MHz under agenda item 1.5 for the purpose of aeronautical mobile telemetry applications. These studies have shown that AM(R)S can share with both the existing fixed satellite service and possible aeronautical telemetry (AMT) systems in the band 5 091-5 150 MHz.

The second category for bidirectional air to ground applications could support a moderate data throughput over longer propagation distances out to radio line-of-sight. These applications require a number of distinct channels to allow for sector-to-sector assignments. For radio line-of-sight applications, ICAO and WP 8B recommended 960 - 1 024 MHz as a suitable band. The provisions of the new footnote No. 5.328[C] and resolution AM(R)S contained in this proposal should enter into force on [10] November 2007. The provisional application of this footnote and associated resolution should be contained in a WRC resolution similar to Resolution 96 (WRC-03) on the provisional

¹ Note that AM(R)S allocations in the band 108-117.975 MHz are only being considered by the U.S. for new aviation navigation surveillance technology consistent with No. 5.197A.

application of certain provisions of the Radio Regulations as revised by WRC-03 and abrogation of certain resolutions and recommendations.

The 5091-5150 MHz band is used by the fixed-satellite service to provide feeder uplinks for non-geostationary mobile-satellite service systems. Studies within WP8B have shown that those feeder links would be protected from interference from new new AM(R)S applications proposed for this band. No priority over other uses in this band is established for the AM(R)S uses.

USA/ / 1 MOD

Allocation to services		
Region 1	Region 2	Region 3
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	890-902 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation 5.318 5.325	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation
	902-928 FIXED Amateur Mobile except aeronautical mobile 5.325A Radiolocation 5.150 5.325 5.326	
	928-942 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation 5.325	
	5.323	
942-960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	942-960 FIXED MOBILE 5.317A	942-960 FIXED MOBILE 5.317A BROADCASTING 5.320
960-1 164 AERONAUTICAL RADIONAVIGATION 5.328 ADD 5.328[C]		

Reasons: To provide allocations to support evolving AM(R)S applications.

USA/ / 2 MOD

4 800-5 570 MHz

Allocation to services		
Region 1	Region 2	Region 3
4 800-4 990	FIXED MOBILE 5.442 Radio astronomy 5.149 5.339 5.443	
4 990-5 000	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	
5 000-5 010	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367	
5 010-5 030	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-space) 5.328B 5.443B 5.367	
5 030-5 150	AERONAUTICAL RADIONAVIGATION 5.367 5.444 5.444A ADD 5.444[B]	

Reasons: To provide allocations to support evolving AM(R)S applications.

USA/ / 3 ADD

5.328[C] The band 960 - 1 024 MHz is also allocated to the aeronautical mobile (R) service on a primary basis, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service operating in accordance with international aeronautical standards. Such use also shall be in accordance with Resolution [AM(R)S 960].

Reasons: To provide allocations to support evolving AM(R)S applications. Compatibility with regard to existing aeronautical radionavigation service (ARNS) systems will be addressed as a part of standards development for the new AM(R)S system.

USA/ / 4 ADD

5.444[B] The band 5 091-5 150 MHz is also allocated to the aeronautical mobile (R) service on a primary basis, limited to systems operating in accordance with recognized international aeronautical standards. Resolution [AMRS-FSS] shall apply.

Reasons: To provide allocations to support evolving AM(R)S applications. Compatibility with regard to existing aeronautical radionavigation service (ARNS) systems will be addressed as a part of standards development for the new AM(R)S system. The 5 091-5 150 MHz band is used by the fixed-satellite service to provide feeder uplinks for non-geostationary mobile-satellite systems

(5.444A) ITU-R studies show that these feederlinks would be protected for interference from new AM(R)S applications proposed for this band. No priority over the FSS in this band is established for the AM(R)S uses.

USA/ /5 ADD

RESOLUTION [AM(R)S 960] (WRC-07)

Use of the band 960-1 024 MHz by aeronautical services

The World Radiocommunication Conference (Geneva, 2007),

considering

- a) the current allocation of the frequency band 960-1 164 MHz to the aeronautical radionavigation service (ARNS);
- b) the use of the band 960 - 1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities per No. **5.328**;
- c) that new technologies are being developed to support communications and air navigation, including airborne and ground surveillance applications;
- d) that new applications and concepts in air traffic management which are data intensive are being developed,

recognizing

- a) that precedence must be given to the ARNS operating in the frequency band 960 - 1 164 MHz;
- b) that Annex 10 of the Convention of the International Civil Aviation Organization (ICAO) contains standards and recommended practices (SARPs) for aeronautical radionavigation and radiocommunication systems used by international civil aviation;
- c) that all compatibility issues between the ICAO standard Universal Access Transceiver (UAT) and other systems which operate in the band 960-1024 MHz have been addressed within ICAO,

noting

that no compatibility criteria currently exist between AM(R)S systems proposed for operations in the frequency band 960 - 1 024 MHz and the existing ARNS aeronautical systems in the band,

resolves

that prior to operating in the frequency band 960-1 024 MHz any AM(R)S systems shall have Standards and Recommended Practices requirements published in Annex 10 of the ICAO Convention on International Civil Aviation, and that those requirements will ensure compatibility with and not constrain the future development of ARNS systems operating in accordance with international (ICAO) standards;

instructs the Secretary-General

to bring this Resolution to the attention of ICAO.

Reasons: A resolution is needed to indicate the systems allowed under the AM(R)S allocation in the 960-1024 MHz band and to explain the role of ICAO in developing standards for compatibility between ARNS and AMRS in this band.

USA/ /6 ADD

Insert in the resolves of Resolution [WRC-07] *Provisional application of certain provisions of the Radio Regulations as revised by WRC-07 and abrogation of certain Resolutions and Recommendations:*

RR 5.328[C] and Resolution **AM(R) 960** shall provisionally apply as of [10] November 2007.

Reasons: Because Resolution and RR 5.328[C] address compatibility issues that need to be implemented prior to adding AM(R)S uses to the band, the provisions of the new footnote should enter into force on [10] November 2007. The provisional application of this footnote should be inserted in the WRC-07 resolution similar to Resolution **96 (WRC-03)** on the provisional application of certain provisions of the Radio Regulations as revised by WRC-03 and abrogation of certain resolutions and recommendations.

USA/ /8

ADD

RESOLUTION [AMRS-FSS] (WRC-07)

Considerations for Sharing the band 5091-5150 MHz by the aeronautical mobile (R) service and fixed-satellite service

The World Radiocommunication Conference (Geneva, 2007),

considering

a) the current allocation of the 5 091 - 5 150 MHz band to the fixed-satellite (FSS) (Earth-to-space), which is limited to feeder links of non-geostationary satellite (non-GSO) systems in the mobile-satellite service (MSS) services;

b) the band 5 000-5 150 MHz is also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. 9.21;

c) this conference has allocated the 5 091-5 150 MHz band for the aeronautical mobile service aeronautical mobile (R) service limited to systems operating in accordance with recognized international aeronautical standards,

recognizing

a) that precedence is to be given to the microwave landing system (MLS) in accordance with No. **5.444** in the frequency band 5 030-5 150 MHz;

b) that Resolution 114 (WRC-03) applies to the sharing conditions between the fixed-satellite and aeronautical radionavigation service in the 5 091-5 150 MHz band;

c) that the International Civil Aviation Organization publishes standards for aeronautical mobile (R) systems,

noting

that ITU-R Recommendation [5 GHz] describes methods for ensuring compatibility between the AM(R)S and FSS operating in the band 5091-5150 MHz,

resolves

that administrations, in making assignments to the aeronautical mobile (R) service, shall take into account International Civil Aviation (ICAO) Standards and Recommended Practices (SARPS) for AM(R)S systems operating in this band, as well as the sharing methods contained in ITU-R Recommendation [5 GHz], and use minimum separation criteria in order to minimize the impact on fixed-satellite service assignments.

USA/ /8 NOC

RESOLUTION 413 (WRC-03)

Use of the band 108-117.975 MHz by Aeronautical Service

Reasons: No additional allocations are being proposed that require RES 413 to be modified to ensure compatibility with existing services in lower adjacent band. If such proposals are made by the WRC it would be appropriate to review Resolution 413.
